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HEALTH

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EDITORIAL

Accidents and Injuries

Accidents of one kind or another are of daily occurrence, especially in big cities and industrial centres. Very often, people are knocked down by motor cars and other vehicles and are subjected to injuries and bleeding and sometimes fractures of bones; Some are drowned in tanks. A few others may get enveloped by fire or suffer from burns. Some may be smitten by snakes. The fate of such persons largely depends on the immediate scientific treatment that is made available to them. Only qualified doctors are generally considered to be able to render it. But, it is not always possible to get this timely treatment by a qualified doctor. Therefore, there should be men and women every-where equipped with the knowledge and technique of rendering emergency treatment scientifically. Such scientific emergency treatment of accidents and injuries and sudden illness, rendered by persons specially trained for the purpose before the arrival of a doctor, is called First Aid.

The desire to help a fellow-being who is in agony exists in every person. But people shrink from doing anything because they do not know what is the right thing to do. They fear they may do harm instead of doing good. Knowledge of First Aid enables men and women to render prompt treatment to the injured, whose life is in immediate danger. They would perhaps be able to save a life that would otherwise be lost. We know that a stitch in time saves nine. It is as true in these cases of accidents and injuries as in others.

A few minutes' severe *bleeding* may end in death and to wait for the doctor to come and stop the bleeding is nothing less than madness, as by that time the case might prove fatal.

In cases of *fracture*, if the broken limb is not properly immobilised, the cut ends of the broken bone may do great harm to the

structures round about them during movements, or a closed fracture may become open by the broken piece piercing through the skin. If people have a knowledge of First Aid, they can not only detect fractures, but also treat them promptly till expert service is obtained.

Dr. Sylvester's method of artificial expiration in cases of drowning.

In cases of *drowning*, if artificial respiration is started immediately instead of waiting for the doctor, many precious lives may be saved before it is too late.

When the dress of a person catches *fire* and is in flames, he can save his life if he knows that fire will be extinguished by wrapping himself with a rug or blanket and rolling on the ground instead of rushing out of doors.

1. This illustrates how a person in rushing out into the street is in a mass of flames.

2. This figure shows how the person lies on her face, to escape from being burnt to death.

3. The last figure illustrates how the rug (or mat, blapket. sack, cloak, coat, etc.), quickly smothers flames if thrown on to them and pressed down.

In cases of *burns*, it is imperative that people should know how germs from outside could be prevented from entering into the burnt area. Otherwise, the germs may cause havoc and bring danger to life itself.

In cases of *snake-bites*, it is of utmost importance to check the poison from spreading all over the body.

Such simple things as rubbing the eyes when there is some *foreign-body* in them may have grave consequences. A knowledge of First Aid will help people to do the right thing in all such cases and its importance is therefore plain.

Tetanus is a dreadful disease and is a complication of accidents and injuries. This is caused by the contamination of the external wound by tetanus spores which on germination in the dirty wound, give rise to a poison and this when absorbed, is damaging to the nervous system. As a result of this, people get a series of tonic muscular spasms, *i.e.*, convulsions repeated at regular intervals. Early symptoms are, difficulty in opening the mouth, pain and stiffness in the back of the neck and abdomen. Later on, rigidity of the muscles develop, the back will be slightly arched, the neck cannot be bent forward, the

abdomen will be rigid and board-like. In a fully developed case, the convulsions come at regular intervals, during which every muscle in the body is tonically contracted. The jaws are tightly clenched, the head is retracted, the back arched, the chest and abdomen are fixed and the limbs are extended. If this thing is continued for sometime, naturally it will exhaust the patient and result in his death. But *tetanus* is completely preventable. The *tetanus* spores are found in the soil and in the excreta of animals. Therefore, the wound must be prevented from getting contaminated with soil, cow-dung or horse excreta. Next, the wound must be properly sterilised and kept clean with antiseptics such as Tr. Iodine, so that its condition is unfavourable to its germination. The most important thing is the injection of a prophylactic dose of antitetanic serum, which will be detrimental to the growth of the spores in the wound. But it will be difficult to convince many of the patients about the advantage of this injection, because they are not aware of the seriousness of this complication. During the last war, the use of this prophylactic injection had much reduced the incidence of this disease and even if it developed in a case where an anti-toxic serum had been given, the course was mild and fatality nil. Now-a-days, *tetanus* generally develops in cases of slight injuries also. In serious accidents, the patient is taken to a doctor and necessary treatment given, but mild injuries are apt to be neglected and the germs allowed to contaminate and multiply. So, in all cases of accidents, whether mild or serious, people must be on their guard and take proper care.

We have to lay stress on the importance of this subject of accidents on account of the present international situation. The modern war is not waged between two armed forces, but the attack is mainly directed on the civil population—on women and children, the sick and the disabled. Towns and villages are mercilessly bombed, causing severe casuality on the civil population. Let us hope that such a catastrophy may not befall us. But all the same, we must be prepared for all eventualities. In such conditions,people cannot at all depend upon the immediate attention of doctors, hospitals and the nursing staff. They must have an army of First-Aiders and Ambulance workers to do the preliminary treatment in an emergency before the doctors can find time to see all the cases of accidents and injuries.

There must be a wide and vigorous campaign for training the people in First Aid. Every mother and every teacher must know the elements of First Aid so as to be prepared for any contingency. We would advise one and all to be well-up with First Aid treatment of accidents. We would also suggest that schools and colleges, factories and mines, workshops and offices, Police force, and Scout organisations must have regular lectures on this subject, for the benefit of all concerned. The local branch of the St. John's Ambulance Association or the Red Cross Society renders great help by imparting instruction in First Aid. Regular classes are held in different localities for training in the First Aid and Ambulance work. They will be too glad to make the necessary arrangement for the instruction of those who desire to have it. Those who are unable to attend these classes can get the necessary instruction and information from books available on the subject.*

* Indian Manual of First Aid—Published by The St. John's Ambulance Association.

*First Aid in Accidents, by Dr. U. Rama Rau, published in English Tamil, Telugu Canarese and Malayalam.

IMMUNOLOGY — ITS BIRTH AND GROWTH

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FROM time immemorial, it was known to mankind,that certain disease-products introduced into animal body conferred immunity or power of resistance against subsequent attack of the same disease. This knowledge had been widely utilised since ancient times in different countries including India, China and Persia,in the prevention of small-pox. Dried scabs from smallpox eruptions were either inhaled, ingested or introduced by skin wounds for protection against future attacks of the disease. But this method had the serious drawback that, instead of conferring immunity, it fairly frequently produced the disease itself, often with a fatal result.

It was not until 1796, that Jenner, acting on the general belief that people getting attacks of cowpox were immune against small-pox, first introduced the present day system of small-pox vaccination. He inoculated small quantities of the material from eruptions of a small-pox patient into the skin of cows and from the pustules that developed, he collected the material for subsequent human immunization. It was observed that by this passage through the bovine species, the material was so modified that it did not give rise to the generalised eruptions of small-pox in human beings; only localised pustules developed at the site of introduction and the subject became resistant to subsequent attacks of the disease itself.

Apart from this early observation, the science of immunology was till then non-existent,and was so for years to come. Existence of bacteria was until that time nothing more than a disputed theoretical conjecture and their role as agents of diseases was beyond human knowledge. The first to observe living things of microscopic dimensions was the great Dutch microscopist, Anthony van Leeuwenhoek of Delft (1632-1723). Though not educated in the ordinary sense, by his wonderful industry and skill, he was destined to lay the first and the most important stone in the foundation of microbiology. Leeuwenhoek made his own microscopes. Though crude in comparison to their present day substitutes, they gave him a magnification upto 300 diameters. In 1676, he first observed and described some minute living creatures in stagnant rain water under his microscope, the smallest of which were probably bacteria. Again in 1683, he observed in the scrapings from his teeth minute living animals, the bacterial character of which was beyond question. In appreciation of his early researches, he was elected a Fellow of the Royal Society in 1680 and his memorable observations are still preserved in its library in the form of about 200 letters written by him to the Society.

Notwithstanding the findings of Leeuwenhoek and other microscopists, that there was a world of living beings invisible except with the microscope and the ancient observation that diseases were often transmitted from subject to subject through association—the merely theoretical concept (contagium vivum)—that living germs of microscopic dimensions, transmitted from the sick to the healthy, caused the spread of disease,were yet to be proved by direct experimental observations. The actual demonstration of the possibility of this transmission of disease germs was left to Agostine Bassi (1835) of Lodi, a Doctor of Law, a man not trained in science, persued by poverty,

of poor vision and miserable health. Nevertheless, by his zeal and devotion, he proved by direct observations, that 'Calcino', a certain disease of silkworm, was transmissible and that it was caused by an infective fungus His findings were confirmed and gradually followed by a host of other similar observations by others,—Pasteur, Koch and Lister, to name only a few—regarding various microbes and the different diseases they caused in men and animals.

Amidst the vast amount of experimental studies on the growth and nature of bacteria, undertaken by many talented scientists of his time the works of the celebrated Louis Pasteur of Paris and his pupils are of paramount importance. It was Pasteur and his associates, who settled the various fundamental questions at issue and also developed the technique of artificial cultivation and study of bacteria.

The great Pasteur started his career as a chemist and diverted his attention to microbiology during his classical observations on vinous fermentation and then to bacteriology proper. From each of the varied and hotly disputed fields of science he entered, he emerged as the hero, fighting with almost fanatic zeal against opposition till 'every redoubt of unbelief had been taken, every opponent converted or slain'.

But his creative genius was not yet exhausted; though nearing his sixtieth year, he suddenly explored new regions by a series of admirable researches of immense potentialities and founded the basis of the future science of immunology. From a study of Jennerian vaccination for small-pox, he had a notion, that a similar process might be applicable to other maladies as well. He first approached a disease of the fowl known as chicken-cholera. He found that the causative bacillus could be cultivated in artificial medium of chicken-broth in such a way that it no longer caused the disease. This he called 'attenuation' of the culture.

When this attenuated culture was injected in healthy fowls, they became immune against subsequent infection by virulent cultures of the microbe. The same principle he applied in 1881 to the prevention of anthrax, an almost invariably fatal animal disease, which was widely prevalent amongst domestic cattle in Europe during his time and also claimed a good number of victims from amongst the people like cattle farmers, wool sorters, butchers etc., who were intimately associated with cattle Perhaps, it will not be out of place to narrate here, what is probably the greatest single experiment in immunology, which drew most of the attention of the whole world to this infant science.

To demonstrate the efficacy of his preventive inoculations against anthrax, the Agricultural Society of Melan placed 60 animals at the disposal of Pasteur and his associates. In the yard of the farm, Pouilly-le-Fort, a mile from Melan, the experiment was performed in the presence of a vast gathering of all sorts of people including reputed scientists of the day. The experiment consisted of inoculation on the 5th May 1881, of 24 sheep, 1 goat and 6 cows with five drops of attenuated culture of anthrax bacillus. On May 17th, 1881, all the animals were reinoculated with a less attenuated culture. On May 31st, 1881, all the treated animals received injections of a highly virulent antharx culture, which was also injected into 24 sheep, 1 goat and 4 cows, not previously inoculated and serving as controls. On June 2nd, 1881, all the vaccinated animals were well, whereas all the control sheep and the goat were dead and the 4 control cows also showed definite signs of anthrax infection. M de Blowitz, a correspondent of *The Times*, who was present at the demonstration, gave it the wide publicity it deserved and made the Pouilly-le-Fort experiment famous. Since then,

Pasteur's method of treatment has been widely used for prevention of this disease with great success.

Although crippled with partial paralysis and old age, he next proceeded to the investigation of rabies of hydrophobia. The spinal cord of a rabbit killed by injection of the virus of rabies was found to cause the disease, when emulsified and injected in healthy animals. But on storage, the cord was observed to become gradually harmless. Pasteur's method of protection consisted of injecting emulsion from an old, harmless cord to begin with and then giving fresher and fresher cords day by day, till finally the fresh and virulent material was borne by the treated animal with impunity. His first human subject for this treatment was Joseph Meister, a 9 year old boy from Alsace, who was brought to him on July 6, 1885 having been severely bitten by a dog,certainly rabid. The boy received a course of Pasteur's inoculations and remained well. His second case was of special interest due to its humane appeal. He was Jean Baptiste Jupille, a 15 year old shepherd boy of Villera-Farley in Jura, who received extensive bites from a rabid dog in his desperate attempts to save a number of children from the brute. He killed the dog with his sabot and the children were saved. Jupille was brought to Pasteur for treatment. This time too the result was successful.

Pasteur and his researches were received with liveliest enthusiasm and towards the end of his fruitful career, a movement was set afoot for erection of a scientific institute for furtherance of his researches. Money was raised from the public and the first "Institut Pasteur" was inaugurated in Paris on November 14, 1888. In front of this institute,the deed of the boy-hero Jupille stands commemorated in the form of his bronze statue.

That killed germs also can be used for artificial immunisation was first noted by D. E. Salmon and Theobald Smith (1884-1886). This method is widely adopted for prevention of typhoid fever and cholera.

Uptill this stage, we have been discussing what is technically known as 'active immunisation', because in all those works, the subject treated for immunisation actively generated the protective antibodies in his or its own system on being inoculated with disease germs or their modifications. Immunology advanced the next important step of 'passive immunisation' in 1890. The German scientist Von Behring and his Japanese coworker Kitasato jointly published their epoch-making paper on the production of antitoxin on the 4th December, 1890. The causative germ of tetanus, when artificially cultured in laboratory, was observed to liberate the specific toxin of tetanus in the fluid part of the culture medium. The culture fluid, when filtered free of the germs, was seen to produce typical tetanus on injection in lower animals. It was also observed that when laboratory animals received consecutive, gradually increasing doses of such filtrate (toxin) beginning with a very minute dose, the animals became immune, so that they could easily tolerate many times the otherwise lethal dose of the toxin or the germ itself. When the treated animals were bled and the serum separated out, it was found to protect other untreated animals against lethal dose of the toxin on injection. This protective power of the serum is due to the presence of specific toxin-neutralizing substance called antitoxin, elaborated inside the system of the animals on injection of toxin. One week after the publication of the above-mentioned paper on tetanus antitoxin, Behring alone published his work on diphtheria antitoxin. This is the beginning of 'passive immunization', so called because the subject protected by the treatment did not produce the antibodies inside his or its own system, but received ready-made protective substances from some other animal, previously actively immunised.

It was later observed that if, instead of bacteria-free filtrate, bacteria themselves were injected in gradually increasing doses, this too would confer immunity to the animals treated and their serum also might be used in the treatment of infection by that bacterium with beneficial results.

From the practical point of view, great credit must be given to Paul Ehrlich, who established the principles and technique of estimation of potency of bacterial toxins and antitoxins on lower animals (1897, 1898). This made the use of antitoxins possible for preventive and curative treatment of human beings as today.

This is the bare skeleton of the history of birth and growth of the infant science of Immunology. It is growing and may it grow rapidly still stronger and bigger, from day to day, to the benefit of mankind.

DIET REFORM

By

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Even to superficial observation, it is clear that there is a steady degeneration in every family from generation to generation. It is also clear that our present diet is different from that of our previous generations in material and method.

Diet diseases are on the increase. These are quite a large number and can be traced directly to diet. As examples, a few can be named: beri-beri, rickets dyspepsia, gastric ulcer, some eye-complaints etc.

There are some other diseases which are indirectly due to diet and they are also on the increase. These —diabetes, leprosy, nervous disorders etc.—prevail only inrice-eating areas.

Any disease will prefer an ill-fed person, particularly infections, and any method of control of these should include the improvement of the diet of the community. Malaria, hookworm, consumption, are problems closely associated with diet also.

The same lesson is learnt by studying the diet of other races. The North Indian races who subsist on wheat are better in physique.

Animal experiments, done in research laboratories, conclusively prove the importance of wholesome and balanced food. Animals like rats, fed on milled rice alone, rapidly deteriorate in their physique, productivity, longevity and develop diseases.

Expectant mothers and nursing mothers, who require specially good food and are denied it, are seriously affected and transmit various disabilities to their offsprings. The high maternal death rate and infantile mortality rate cannot be reduced unless the diet is improved.

The absence of mills and of short-period crops, the necessity to use other staple foods besides rice, are some of the main factors responsible for the better condition of previous generations.

That pounded rice is good is only partly true. The vitamin-bearing embryo of each seed is destroyed and the bran removed partially or wholly where the housewife is over zealous and refined in her imagination. It is not possible to fix a standard for pounded rice or to say which variety of it is good. Colour is deceptive, depending on the quality of paddy used. Some unscrupulous

businessmen are artificially coloring milled rice to look like pounded stuff. The fraud can easily be detected with dilute iodine. Only rice from the wooden grinder stands this test.

The washing of the rice, prior to boiling, is as great an evil as the habit of straining of the 'congee' after cooking. Ground rice has not much to lose by the preliminary washing. Even the conjee is very little to strain as this rice requires a lot of more water to boil and cook well.

The same absence of bran layer in the milled and pounded rice renders it more susceptible to invasion by fungus growths which render the rice poisonous and responsible for various nerve disorders.

The bran layer contains salts of iron, manganese, copper and phosphates, which are essential for health, digestion and protection of the body. The composition of bran is very intersting to note: it contains 15.4% of proteids 19.7% of fats and 8.5% of salts.It also contains some fibre essential for natural movement of bowels.

The embryo of the seed is important too. Most of the vitamins are contained therein. The function of this essential element is well recognised.

To conclude: There may be many defects requiring remedy. Some may involve cost and some others require state help. Technical skill also may be necessary to plan out diets in some cases. But, here is a simple solution for improving the diet by at least 80 percent if every family makes a resolve of using only the rice from the wooden grinder. This racial suicide by slow degrees must be immediately and voluntarily stopped.

Our Invisible Foes and Friends

By

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Foes. — A disease is the result of the infection of the system by a species of germs which are the simplest form of life. These germs are very minute and cannot be seen without the aid of a microscope. So, they are designated as our *Invisible Foes.*

Germs are living things, both animal and vegetable, including microbes, bacilli, bacteria and also yeast. They therefore, require food of some sort or other in order to keep themselves alive and grow. This food they obtain from water, air, or the chemical substances in the ground, the vegetable kingdom and animal, human or otherwise. In fact, all the visible world is swarming with germs and so is the invisible air. They cause disease in our bodies when they grow out of place in it and in excessive numbers.

The system of a newly born baby of healthy parents is sterile. But within a few hours, the skin and mucous surfaces become the seat of numerous germs, a condition more or less persisting for the rest of its life. Some germs are pathogenic *i.e.* are capable of producing diseases while others are innocuous. Some germs, however, have their definite use in some particular parts of the body such as the *Bacillus coli,* the germ which lives normally in the colon where it helps to break up the unwanted waste materials of food in order that they may pass on and be voided. This bacillus is useful and normal in its proper place in the lower bowel and in the appropriate numbers, but when it strays into other regions such as the upper bowel and gall-bladder,it becomes the source of ill-health.

These invisible foes enter our bodies through various routes *e.g.* nose and mouth with inhaled air and food, through cutaneous abrasions, or intermediary hosts (vector) as mosquitoes, sandflies, fleas, ticks and others. Besides these, some lower animals may be sources of a few infections—such as plague from rat, Malta fever from goats and so on.

A form of germ which is known always to cause a definite disease is called the *specific organism* of that disease as, for instance, the Tubercle bacillus which is specific for tuberculosis. But the path of their entrance into the system is of considerable importance in determining their effects on the host, as for example, virulent Pneumococci, when swallowed, may not produce the disease, whereas if they enter and get a foot-hold in the respiratory passage they may cause even fatal pneumonia. Many of these specific germs, however, can be present in the body in quite large numbers without causing an attack of the disease for which they are specific, because other conditions such as the resistant power of the body are too strong for them to gain the upper hand.

Many diseases are due not to a single organism but to several species attacking a weakened part such as the bronchial tubes in bronchitis. Inflammation of the gall-bladder may be caused by several sorts of germs, and similarly inflammation in the stomach, the intestine, etc. Influenza is probably one of the mildest infections, though a germ called the *Pfeiffer's bacillus* is commonly called the Influenza bacillus.

The germs which cause smallpox, typhus fever, hydrophobia, mumps etc., have not been found. The name *virus* is given to a germ which is presumed to be the cause of certain diseases, but which cannot be found, possibly because it is so small that no microscope has yet been made that will enable it to be seen. The disease, however, behaves as if there were a germ causing it and so it is presumed that there is such a germ. Only, we are at present unable to discover it. Certainly smallpox looks very like any other infectious disease caused by germs, and so it may be supposed that it is in fact caused by a particular germ, although at present this germ has not been discovered.

Some germs have no power of movement of their own, and are simply carried about in the fluids of the body, but others can move of their own accord.

The main classes of germs are :—

The cocci or spherical germs :—The commonest cocci are Streptococci, Staphylococci and Pneumococci. These cocci are of the shape of a sphere when they are looked at singly, but they are more often seen in groups or strings with their sides flattened against their neighbours. The illustration commonly used to give some idea of their size is that a drop of water would contain at least 1000 millions. The Pneumococcus is the germ which causes pneumonia, the Staphylococcus is the cause of boils and other skin troubles, and the Streptococcus causes tonsillitis, scarlet fever, erysipelas and various other infections.

The bacilli or rod-shaped germs :—These types of germs are shaped like little rods. A great number of diseases owe their origin to bacilli in some form or other. For instance, tuberculosis, meningitis, anthrax, diphtheria, typhoid fever, dysentery, botulism, colitis, conjunctivitis and very many more diseases are all caused by bacilli.

The spirilla or twisted shaped germs :—Syphilis is caused by twisted type of germs called Spirilla.

Some germs cannot live without the presence of oxygen and these are called *acrobes*. Others die in the presence of oxygen and are called *anacrobes*. *Acrobes* are more virulent

than *anacrobes*. The typical *acrobes* are the germs of diphtheria, anthrax and cerebro-spinal fever. *Anacrobes* are the *B. welchii* which cause gas gangrene, and the bacillus of lockjaw. Many germs will thrive whether with or without oxygen such as the coccus of pneumonia and the bacillus of typhoid fever.

Germs after gaining entrance into the system produce poisonous substances known as *toxins*. These toxins produce diseases. Some toxins are set free from the germs and are called *extra-cellular* toxins ; others are actual constituents of the germ substance being liberated when the germs break up and are called *intra-cellular* toxins.

Friends.—When germs enter the body through the oral route, many are destroyed by the hydrochloric acid of the gastric juice; then through the inspired air, germs which die in the presence of oxygen die in the lungs ; some germs are prevented from entering through the respiratory passage by the hairs in the nostrils.

Inspite of all these natural defences, some germs enter the system. But we are equipped with our own forces, our *invisible friends*, in our blood to render these germs harmless to us except when for some reason our resistance is lowered and we let them get temporarily ahead of our fighting forces.

The *white blood corpuscles* possess the power of moving about in the blood-stream and are often described as the scavengers of the body, as they are able to eat up and destroy invading foreign bodies. such as germs. An invasion of germs into the blood causes a great increase in the number of these white blood corpuscles. They make their way to the point of invasion and wage war on the intruders. In a vast majority of cases, the white blood corpuscles prevail upon the invading germs and destroy them. The dead bodies of these germs are devoured by the white blood corpuscles —this process is called *phagocytosis*. It is by these means that the body is protected from infection by germs. Some white blood corpuscles die in the fight, their dead bodies remain untouched by the germs, get decomposed and pus is formed. This pus becomes absorbed and is got rid of by the system through the kidneys, bowels, skin and other routes.

A part of the defensive mechanism of man against disease due to certain living (germs) or non-living poisons is found in the blood. All healthy bloods are able to antagonise to some extent, may poisons and organisms. This power varies from individual to individual and is to some extent inherited. The blood, however, possesses the remarkable power to form new *anti-bodies* against special germs, or poisons. This is accomplished in two main ways. The *first* is the creation of a substance which combines with poison, so forming a neutral non-toxic substance. These anti-toxins are antagonistic only to the particular toxin. Unfortunately, only a small percentage of diseases are associated with well-defined toxins, so that there are but a small number of active practical anti-toxins.

The *second* part of the defensive mechanism developed in the blood serum is the production of bodies which either destroy or inactivate organisms themselves. These substances are less well-defined than anti-toxins, and in some cases appear to be an added property of the blood, rather than the production of a substance which may be isolated. They are, however, also specific to the particular organism involved. Following nearly all fever-producing diseases (except those due to malaria and higher organisms) anti-bodies exist in the blood of the patient who has recovered, or is recovering. In some cases, they persist for long periods and in others such as in influenza, they quite rapidly disappear. The capacity of blood for producing anti-bodies is also limited. When a person is attacked

with an infectious disease during the period of his suffering, this blood produces anti-bodies. After the cure of the disease, these anti-bodies remain in the blood for varying lengths of time. This explains why the normal blood contains substances which are hostile to germ life and so tend to protect against disease. Every one knows that certain people, when exposed to infection, do not contract the disease. This is due to those protective qualities which constitute *natural immunity.* It is also well that one attack of an infectious disease protects against another attack of the same disease. In such cases, an *acquired immunity* has been developed. This acquired immunity lasts for different periods for different diseases.

Thus we see, germs produce their harmful effects by manufacturing poisons (toxins) but the blood counteracts this by producing an antidote or antibody. It is the formation of such substances which enables a person to recover from an attack of a certain disease and it is their persistence in the blood in some quantity which gives immunity against further attacks of the same disease.

The blood possesses other defensive powers against harmful germs. In the fluid part of the blood, there are substances called *bacterio-lysins* which are hostile to germs. Also, invasion by germs stimulates the *agglutinating* power of the blood, by which the invading germs are rendered immobile and are dumped together so that their activities are impeded.

Mother *Nature* also attempts for getting rid of germs or offending materials from the body in various ways *e.g.*, purging, vomiting, sneezing, coughing etc. As for example, when any germ or offending material gets entrance into the gastro-intestinal tract, nature gets rid of them by purging or vomiting. An irritating material entering the respiratory tract causes sneezing and coughing, and any foreign body that may have fallen in the eyes causes watering of the eyes and the foreign body is washed out of the eyes.

Reference :—The Universal Home Doctor—The Statesman Ltd.

The Scorpion and its Stings

The scorpions are common in a warm country like India. They live in the deep cracks of the sunburned clay, in rotting wood, beneath stones etc.

They resemble diminutive lobsters from a half to eight inches in length with strong prehensile palpæ. The last six joints of the segmented abdomen narrow into a tail unusually carried in a forward curl above the back which can be thrown in advance of the body by a sharp lashing motion, in defence or attack. The tail ends in a curved horny spine containing two orifices which connect with the poison gland in the last segment. When the tip of the spine is clipped, there exudes a clear, colourless and slightly viscid fluid, resembling dilute glycerine.

The scorpion's colour is brown, but the shade varies with the immediate environment; almost colourless, translucent scorpions become brown and opaque in a few weeks if placed in black surroundings.

The scorpion is chiefly nocturnal in roving. It preys on spiders or insects, which it kills by repeatedly stinging and by crushing with the heavy palpæ Spiders stung nearly always die in convulsions as may the larger animals. Sometimes the scorpions fight among themselves and the victor tears its opponent into pieces and devours it up. The scorpion is found to be immune to its own poison and hence its blood is used as an anti-venom. Its venom may cause death in animals and human beings, the deaths following symptoms apparently originating from cerebro-spinal effects. The venom is less toxic during cool seasons. The aged and infants have more severe reactions than do others.

The treatment of scorpion sting by the use of scorpion blood is possible but highly impractical, because of the difficulty of obtaining the blood in sufficient quantity, and because of the rapid deterioration of its protective properties. Extreme ages and poor physical condition of the patients contribute to the dangers of scorpion stings.—(*South Western Medicine*).

FOOD LIFE

or

VITAMINS

By

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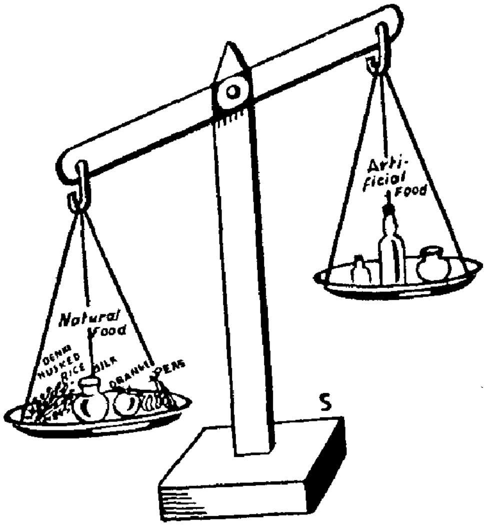
Haiyaghat, Bilaspur (Darbhanga).

THE word 'vitamin' has now-a-days become a household word to every educated class of people. But, very few of them know what the substance is. It is really difficult to define the substance, but it can be named as the essential accessory food principle or the life of the food, without which the food is lifeless and useless. There has been a lot of research on the subject, but no definite conclusion has yet been arrived at.

This substance can be compared with a spark in a 'motor-engine'. Everything is there—the oil, fat and petrol—but the engine cannot move unless there is a spark for lighting the petrol. Similarly, in our body engine, a spark of this type is required for the combustion of food. This spark is *vitamin*. Without this, foods are of little value to the growth of the human system. Thus, vitamins are the essential food factors for keeping good health; for maintaining this, we must be very particular in taking foods which are rich in vitamins.

Vitamins are present in every food in a more or less quantity. The raw or green food materials are richer in vitamins than the dried or fried substances. In many, vitamins are retained even after frying and boiling.

The scientists have separated vitamins from food substances and have classified them mainly into A, B, C, D and E. They have proved by experiment that each group of vitamins has got separate actions on our body. Absence of any group from our food causes certain forms of deficiency in our system. It has been found that avitaminosis causes retardation of bone and tooth calcification, rickets, dental caries, pyorrhoea alveolaris, infection, nerve degeneration etc. In a way, it works like the internal secretion (hormone)



BALANCE OF FOOD.

of gland in our body. So, it is also called a 'food-hormone'. Now we see what an important part these vitamins play in our daily life.

Nature provides us with all sorts of substances which are essential for maintaining a sound health. We must thus be very particular in choosing our daily diet. We should educate our poor country-men about the value of these vitamins. In olden days, when everything was cheap and easily available, people did not even think of these accessory food

substances. They used to live on fresh fruits, vegetables, milk etc., work in fresh air and sunlight; so, the diseases were practically unknown to them. Now in spite of our becoming enlightened in every sphere of life, in food, dress and in everything we are becoming a weaker nation day by day. Now-a-days, we find that it has become a fashion to give artificial food even to new-born kiddies, instead of fresh natural food such as cows' or human milk, which contains much more vitamin than the artificial one. We have forgotten the old denki-husked rice, pure ghee, oil etc. Thus we find ourselves in artificial surroundings. There is a saying of *Seneca*, 'Man does not die; he kills himself'. It is true to every word. We should not kill ourselves like this. We must enjoy good health and try to take as far as possible, natural and fresh things to save ourselves.

Now, let us see how the vitamins play their parts in the formation of our health. The vitamins A and D are fat-soluble dietary factors. The body growth is retarded due to the absence of these vitamins. Consequently, there will be certain forms of diseases in the body *viz.*, rickets, xerophthalmia etc. These vitamins are called anti-xerophthalmic and anti-rachetic vitamins. Similarly, vitamin B has got growth-promoting, appetite-stimulating and anti-neurotic properties, and its deficiency may cause beri-beri, pellagra, etc. Likewise, vitamin C has got anti-scorbutic and vitamin E (fat soluble) anti-sterility properties.

Thus we see, the vitamins are the essential factors in our body-building. Now the readers may find it a problem to select vitaminous food. But, I shall show that the foods that are commonly taken by us, contain most of the vitamins necessary for our body growth. I give below a list of food substances containing different group of vitamins :—

VITAMIN A.	VITAMIN B.	VITAMIN C.	VITAMIN D.	VITAMIN E.
Bread of milk and flour.	Bread of milk and flour.	...	Bread of milk and flour.	...
„ of flour.	„ flour.	...	...	...
Atta.	Atta.	...	...	...
Wheat (whole-meal).	Wheat (whole-meal.)	...	...	...
„ embryo.	„ embryo.	...	...	Wheat embryo.
Fish egg.	Fish-egg.	...	...	...
Bird's egg.	Bird's egg.	...	Bird's egg.	Egg-yolk.
Cod-liver-oil.	...	...	Cod-liver-oil	Cod-liver-oil.
Milk.	Milk.	Milk.	Milk.	...
...	...	...	Butter.	Butter.
Channa.	Channa.	...	...	...
Ghee.	...	...	...	...
Tomato.	Tomato.	Tomato.	...	...
Onion (?)	Onion.	Onion.	...	...
Green-pea.	Green-pea.	Green-pea.	Green-pea.	...
Potato (half-boiled.	Potato (half-boiled).	Potato (half-boiled.	...	...
Plantain (?)	Plantain	Plantain	...	...
	Brinjal.	...	...	...
Green-chilli.	Green-chilli.	Green-chilli.	...	...
Orange juice.	Orange juice.	Orange juice.	...	Orange juice.

I have mentioned above only a few of the vitaminous substances. I could not deal with other vitaminous food materials, due to fear of the article being lengthy. Moreover, it is difficult to write on a technical subject like this in an ordinary way, as I have tried to do to some extent, and I hope the readers will appreciate this.

CEREBRAL MALARIA

(Mis-diagnosed as Krimi-Bikar i.e. Worm-Unconsciousness)

By NIRMAL CHANDRA CHATTRJEE, L.M.F., *Jhenidah, Jessore.*

In our country, cerebral malaria is so very prevalent now-a-days that people are to be educated to secure proper treatment for the disease.

At the first step, the difficulty is that the disease is so sudden that the villagers are often bewildered and think the case to be either worm-unconsciousness or one possessed by ghosts and procure wrong lines of treatment, thus enhancing the chances of death of the child.

Secondly, when the first stage of cerebral malaria is overcome, the child lies down in such an unconscious state that the village-quacks come in and at once diagnose it to be a case of worms. Moreover, the people are so much carried away by this diagnosis that no villager will hear another qualified doctor shouting into his ear that it is cerebral malaria, or meningitis etc.

So, I like to say that the masses should know some premonitory symptoms of the disease and should eradicate the idea of unconsciousness due to worm in all such cases.

A few characteristic premonitory symptoms.—Infants and children are very often attacked though no age is exempted. The attacks may take place when the child is playing or the boy is reading. With the attack, the boy becomes delirious with total loss of senses and even foam may appear in the mouth. The temperature may be sub-normal, normal or high. Secondly, in some series of cases, the child may get temperature for the first day but at mid-night he may lose his senses. So, mothers should be careful to see if the child suckles or not. Sometimes, a boy attacked with malignant malaria, will move from side to side, protrude the tongue or take water but will never speak. This loss of speech is almost always found in cases where loss of senses is not marked.

So the people must be on the alert in such cases, at the time of malaria, that they do not miss the proper selection of medical treatment, because Quinine is the only treatment.

Good Wells for Good Water

Much of the increase in summer diseases, particularly typhoid fever, paratyphoid fever, and diarrhœa and enteritis, can be traced to contaminated water supplies.

Shallow wells of less than 100 feet in depth are the most readily contaminated and should be investigated regarding the location of the well, protection at the surface, protection immediately below the surface and the pump, for possible entrance of bacteria. The well should be located on higher ground and at least 100 feet from privies and other sources of contamination.

A concrete platform and tight pump setting offer the best protection at the surface. Adequate protection in the area immediately below the surface is particularly important because most bacteria are found in this section.

The pump, should be provided with a spout which is turned down and an adequate cover or packing gland for the pump rod.—G.H.F. *in National Health Review.*

THE SMOKING HABIT

By PROF. E. M. AIRI, *Lahore.*

So much has been written about the seductive charm of "*My Lady Nicotine*" that, it becomes necessary to try to discover why she obtains, and retains such a hold upon her many victims; and to do this,we must first know the nature of tobacco.

Tobacco belongs to a class of plants which contain dangerous poisons — the most deadly of them being nicotine. The amount of nicotine in a pound of tobacco is estimated to be three hundred and eighty grams, and when we know that one-tenth of a gram will kill a dog in three minutes, we can realize what a deadly poison nicotine is. The smoke of tobacco, in addition, contains various other poisons, the most important of which are picoline, carbon dioxide, prussic acid etc. They are all deadly poisons when administered in any other than in most minute quantities.

Tobacco-smoke blown on a towel leaves an yellow stain, demonstrating the presence of nicotine poison.

Smoking has well been captioned as a "relic of barbarism" by Dr. Kellogg. Originating with the wild barbarains of America, the smoking habit was, after some years, introduced into Europe. At present,the evil habit is prevalent in almost all the countries and has enslaved many millions of people in its toils.

From these general remarks, it will be readily understood that tobacco is a poison and the effect of smoking is to cause some bodily trouble. There is no doubt whatever that smoking dulls the appetite, blunts the moral sensibility, deadens the conscience, injures the sight and tends to destroy that delicacy of thought and feeling which is characteristic of a true gentleman; the use of tobacco is a stepping stone to vices of the worst character. Tobacco addicts are invisibly wounded men and women, suffering from chronic nicotine poisoning. Their livers, kidneys, and other vital organs are being permanently damaged. The tissues of the blood-vessels, because of the increased tension placed upon them by the poison of tobacco, loose their elasticity. Hearts become degenerated by the abnormal pressure of their diseased blood-vessels. Seeds of Bright's disease, apoplexy and heart-failure are constantly sown—seeds which will inevitably bear fruit in their early dissolution. Tobacco is harmful to our physical welfare and

depressing to our nervous system. Nicotine is a drug, the effects of which cannot be guaranteed under the human law.

D. G. Watson, M.B. says," Decay of teeth and chronic inflammation of the tongue and throat are certainly among the results of smoking, and cancer of the lip, if not a result of smoking, is at least most common among smokers. As for its effects on the alimentary system, flatulence and acid indigestion are not infrequent. The nervous system is affected,in certain cases terribly and in several cases in minor ways. Occasionally, atrophy of the optic nerve and blindness have followed the excessive use of tobacco. Minor manifestations are giddiness,tremulousness, sleeplessness and sometimes neuralgia.

Because of its cardiac effects, tobacco may be exceedingly dangerous and has undoubtedly killed some of its devotees. The cure for its evil consequences is its abandonment.

Generally speaking, it is cigarettes which are productive of the greatest harm. The chief reason why cigarettes do so much harm is because of the inhaling habit. Inhalation is the quickest possible way of getting any volatile poison into the system. The blood of the smoker is absolutely bathed in the poisonous vapour drawn into his lungs from his pipe, cigarette, or cigar. And nine persons out of ten would never become heavy smokers if it were not for inhaling the smoke.

With regard to chewing tobacco, all that can be said is that it is the most pernicious, as well as the most objectionable mode of indulging in tobacco.

The symptoms of chronic tobacco poisoning as vividly summarised by Dr. B. W. Richardson are given here in extenso :

Smoking produces disturbances (1) In the stomach, giving rise to debility, nausea and, in extreme cases, sickness.

2. In the blood, causing undue fluidity and change in the red blood corpuscles.

3. In the heart, producing debility of that organ, and irregular action.

4. In the organs of sense, causing in an extreme degree, dilation of the pupils of the eye, confusion of vision, bright lines, huminous or cobweb specks, and long retention of images on the retina with other analogous symptoms affecting the ear, viz., inability to define sounds clearly and the annoyance of a sharp ringing sound like a whistle or bell.

5. In the brain, suspending the waste of the organ, and oppressing it if it be duly nourished.

6. In the nervous filaments and sympathetic or organic nerves, leading to deficient power in the glands and to secretion in those surfaces, over which the nerves exert a controlling force.

7. In the mucous membrane of the mouth, causing enlargement and soreness of the tonsils, smoker's sore throat, redness, dryness and occasional peeling off of the membrane and either unnatural firmess and contraction, or sponginess of the gums.

8. In the bronchial surface of the lungs, when that is already irritable, sustaining the irritation and increasing the cough.

The fact is established beyond any doubt that tobacco is a poison, deadly in large doses, pernicious and harmful in all cases. And this explains why the use of tabacco in growing boys is most injurious, it stunts them, mentally and physically, and lays the foundation for the acquirement, later, of even more pernicious and reprehensible habits.

A HAPPY HOME

BY B. B. TIPNIS.
B.Sc., LL.B., L.S.G.D.,
Madan Zapa, Baroda.

MAN's attempt to shield himself from the elements gave rise to the blessed institution of Home. Just casually, the first man on the surface of the earth might have gone under an umbrageous tree where he felt relief from the scorching heat of the sun. The branches, however, could not extend adequate protection from the torrents of rain and so he entered a nearby cave in the rocks. After the rain was over, the denizen of the cave, an equally wild animal as the man, pounced upon him, compelling him to give a bold fight for life and win the battle. This was perhaps the first land-mark in the history of our present Home. Thus, the cave of the first human being and the proud mansion of the man of today are both the outcome of the same urge viz. security.

"Our idea of Home is already on the move".

Our childhood, when we are plastic to take impressions, is completely wrapped up in the environments of Home, and since environments play an all important role in moulding our individual personalities, we should be all the more careful to give only the best to our posterity. A happy Home calls for three main factors namely, Harmony, Cleanliness, and Aesthetic sense. Lack of harmony is displayed by constant strife among parents and elderly persons in the house, and outbursts of emotions by them. This sort of behaviour jolts the cosy feeling of security of the children. They have to be constantly at bay to defend themselves. This reaction affects children in various ways in latter life. A joint family system has much to do with the harmony of the house. Whether or not this system is desirable, is not our concern here, but it must be said that, in case a trouble brews up in such a joint concern, the remedy lies in a successful amputation to preserve the domestic bliss.

Like charity, cleanliness begins at home. Untidy, unclean house is bound to cloud the minds of its dwellers with pessimism. If our own dwelling place is dirty, whence can we preach our youngsters to be otherwise ? We are mostly what our habits make us. If we do not revolt against our dirty surroundings in time, we are prone to degenerate to that level unknowingly. The backward drag of habit must be resisted and effort be made to

maintain a high standard of living that is suitable to our station in life.

Aesthetic arrangement of things does not call forth extra expenditure. A few pictures and modest furniture can well present a happy sight if they are tastefully arranged. Dust-laden photo frames, half mutilated flower-pots, faded curtains, half-torn pictures and such ugly things strike a discordant note of pessimism. Such articles should be thrown right away. Association begets attachment, and we are many a time reluctant to part with a thing simply because it is in our possession since long. That is how the store of lumber-room multiplies and at times, permeates into our living space. This should be avoided.

Our idea of a Home is gradually expanding. Scientific researches and new inventions are making our terrestrial globe too compact. Already we are talking of home-team, home-policy, home-army, meaning the Nation as our home. When in future the speed-craze of to-day matures into everyday communication, journey over the whole globe will be a matter of a few hours and the terrestrial globe will be only one home of the human race as such. The foundation of this wide home-to-be must be strengthened from the very beginning, and so we must strive to make this unit a perfect one.

Topics from Medical and Health Periodicals

Your Home

"YOU may travel east or travel west or travel north or travel south but it is generally a fact you like your home the best. However humble or plain, you are glad to be home again. There are more smiles of approval, more freedom of words, more sympathy and belief in each other, and more sympathy in the family circle than anywhere else in the world. Anything short of it is only half happiness."—*John Wanamaker.*

The Secret of Happiness

IF thou workest at that which is before thee, following right reason seriously, vigorously, calmly, without allowing anything else to distract thee, but keeping thy divine part pure, as if thou shouldst be bound to give it back immediately ; if thou holdest to this, expecting nothing, fearing nothing, but satisfied with thy present activity according to nature, and with heroic truth in every word and sound which thou utterest, thou wilt live happy. And there is no man who is able to prevent this.—*Marcus Aurelius Antonius.*

Reduce Appetite in Obesity

"IRRESPECTIVE of whether one considers obesity to be the result of inactivity, the habit of overeating, or to be due to *other causes*, one of the problems that very often arises is that of controlling the appetite of the patient. It is certain that cutting down of the food intake for a sufficient period of time is of vital importance in treating or preventing obesity " says Leon S. Hirsh M.D., in Ohio State Medical Journal, (July 1940).—*The Medical World.*

Preventive Medicine

IT is absurd to talk of Preventive Medicine under the present conditions. Let the statesmen of the world remedy the economic conditions of the people : let the priests attend to their moral and educational needs. They may then call upon the medical man to put into practice the theories of preventive medicine. Rats and their fleas are not killed, but the health dept. pumps in dead plague germs into human beings. Mosquitoes cannot be destroyed or kept away from man, so we dose him with quinine and atebrin. If we can supply people with nourishing and sufficient food, plenty of fresh air, and let them work within the limits of their endurance, we shall have laid the foundation of true preventive medicine.—*Major M. G. Naidu.*

Adulteration of fresh Cow's Milk With Cocoanut Juice

PHYSICAL and chemical analyses were made by Dr. Pablo I. De Jesus, M.D., and Dr. Segundino Jao, M.D., out of 15 samples of milk obtained from two cows, in both the pure and the adulterated state. The adulteration consisted in the addition of a highly diluted emulsion of cocoanut juice, commonly called coconut milk.

The important significant changes noticed in the adulterated milk were lowering of specific gravity, protein, and lactose and increase in fat contents. Another important finding is the detection of the aromatic copra odor on igniting the total residue.

The change in water, ash, and total solid contents in the coconut adulterated milk is variable and cannot be relied upon for detection of this method of adulteration.—*Journal of Philippine Islands Medical Association.*

Cream and Butter

CREAM and butter are very valuable foods but they cannot in any sense be regarded as complete foods because for all parctical purposes their food value depends entirely on their contents of easily digestable and assimilable fat and the growth-promoting and protective vitamin A. They are, therfore, incomplete foods. Cream or butter is considered by many to be by far the most valuable constituent of milk, but this is not the case, for cream or butter contains only one of the three of the essential dietary constituents which are fat, protein and carbohydrate whereas whole-milk contains all of them and separated milk the great bulk of them. -(*K. G. M C. Clinical Society Journal*).

Pomegranate Fruit (Dalimba)

THIS is a very useful fruit for medicine. The rind, the flowers and other parts of the plant are also used in medicine. All parts of the plant are rich in tannin and are employed successfully in diarrhœas and other similar diseases and as local application for relaxad sore throat and cancer of the uterus.

Its root bark is used internally for the destruction of tapeworm. But large doses are not advisable.

The dried rind of the fruit is a valuable tonic and astringent and as decoction with cloves is the best known remedy for the chronic forms of dysentery ; combined with opium it proves most useful in the diarrhœa of the natives of India.

The juice of the ripe fruit contained in the red succulent pulp which covers the seeds, is slightly acid, pleasant to the taste, very refreshing and well calculated to quench the thirst in fevers.

It is also said to be appetiser, blood purifier and astringent (V. G. Desai). It allays thirst and burning in fevers, is good for the heart, throat, and mouth diseases.—(*Practical Medicine*).

Diet in High Blood Pressure

A regulated diet is of paramount importance. It is not recommended that there should be a sudden drastic alteration and reduction, but a change will be essential. The basic principle is a limitation of the number and bulk of the meals, and a severe reduction of all foods which stimulate the cardiovascular system. That means that all animal protein, especially beef, mutton, pork and veal, have to be markedly restricted. Meat extractives as in meat soups and gravies should be totally excluded from the dietary.

Milk should figure prominently as the food for the hyperpietic. If the symptoms are troublesome, rest and a milk diet will often work wonders. Carbohydrates or starchy foods may be taken fairly freely, but care should be taken to avoid excess which will lead to gastric fermentation and dyspepsia.

Green vegetables and fruits can be taken as liberally as the digestion will permit. Considerable importance is attached nowadays to a restriction of the intake of sodium chloride o common salt. It is not enough to omit salt at table: in the preparation of foodstuffs the salt should also be cut out. Strict moderation is required in the matter of tea and coffee, if any, the maximum being two or three cups, weakly infused, per day.

The maintenance of easy and complete motions of the bowels is the next essential feature in the case of the hyperpietic. The use of all irritant purgative is, however, to be avoided. Careful dieting should, of course, prevent constipation, but at all costs the intestinal function must act efficiently so that there is no risk of auto-intoxication.—*Practical Medicine*.

Diet for Rheumatism

VERY little is known about the influence of diet on rheumatism. For this reason the greatest care is necessary on the part of all those who think that by tinkering with their meals they may ward off attacks. People who suffer from recurrent rheumatic affections should always consult a medical man before making any drastic alterations in their diets.

It is true that chronic indigestion does encourage bouts of this malady and all steps should be taken to put this right. Change of diet in these cases is necessary and all foodstuffs which cause stomach troubles ought to be avoided.

In general, it may be said that rheumatic subjects should take the minimum of sugars and starches—the carbohydrate, in other words. Sweets should be cut out altogether.

Red meat, if you have too much, tends to aggravate the complaint. Red meat once a day is quite sufficient.

Fresh fruits and salads on the other hand are good for rheumatic people and so also are butter, eggs, and cheese. In order to flush the organs which deal with waste and to encourage the elimination of these by-products it is advisable to drink as much fluid (water, barley water or home-made lemonade) as you conveniently can. Not less than three pints of water a day is really beneficial.—*Practical Medicine*.

Chemical Elements and Body Balance

EVERYBODY knows the relation between *Iodin* and the thyroid gland. Lack of Iodin causes people to become old, forgetful, inefficient. The best food containing Iodin are :—Cod Liver oil, egg, milk, orange, spinach, tomato, garlic. Iodin stimulates the glands to greater action. It neutralises certain toxins. Those who eat foods rich in Iodin will not suffer from goitre, scrofula, nervous ailments, or defective bone and brain metabolism.

Magnesium makes the body fluids more alkaline or healthy ; makes the body tissues, tendons, muscles, nerves, more elastic. It has a stimulating effect upon the bowels and counteracts body gases, toxins, acids etc. Grape-fruit, orange, lime, lemon, pomegranate,

pineapple—contain it in abundance. It is a sedative to the nerves. It prevents sleeplessness. People who are highly impulsive, excitable, nervous, emotional and sensitive should take food rich in magnesium.

Manganese increases the recuperative power of the body and helps in rheumatic and gouty ailments. Some of the best manganese foods are almonds, milk etc.

Phosphorus is essential to the highly intellectual faculties. It is the element of thought, emotion, intelligence, mental ability; for every time we read, think, or study, we use up phosphorus. It improves the nutrition of nervous tissue and helps to make the bones more dense. It is essential for the idealistic, altruistic, religious and psychic emotions; for the physical senses, particularly taste and touch. It is contained in raw egg yolk, whole barley, beans, wheat bran, red cabbage, milk, whole wheat.—*Health and Happiness.*

Causes of Insomnia or Sleeplessness

PSYCHICAL causes of insomnia have been termed primary as against pain, fever etc. which are regarded as secondary. But this differentiation is far from satisfactory. Anxiety or mental pain and all emotions such as remorse, fear, love, anger, sorrow, and even joy, may give rise to sleeplessness, and require more of psychological treatment. Purely intellectual brain work rarely causes insomnia, provided the work be done under reasonably good physical conditions. But excitement or overstimulation of the mind frequently does. More frequent causes are the various forms of dyspepsia, cough, and various forms of pain. Fever and organic brain diseases require treatment for sleeplessness.

No drugs are necessary for a patient suffering from the primary causes of insomnia. A careful arrangement of his habits and perhaps the restoration of his confidence in his ability to sleep which he may have lost will cure him of this malady. Avoidance of noise and proper ventilation of the bedroom are necessary. Mental relaxation, posture and the bed shed are all to be considered.—*Medico Surgical Suggestions.*

Skin Complaints

SKIN complaints can originate from either external or internal causes or from both acting together. Sunlight may cause skin disease by irritating it excessively. Some people are particularly sensitive to the sun. Friction of clothing on the skin may produce enough local irritation to cause skin disease. Thus, braces and suspenders may produce erythema, going on to weeping eczema. Hair dyes are frequently a cause of serious complaint of the skin. They produce reddening and soreness of the skin. Industrial skin diseases are too many. Bakers, confectioners, gardeners, photographers—all get some kind of skin disease. Men who handle tar sometimes develop a form of tar carcinoma. All these are due to external causes.

Those which are due to internal causes include impetigo, boils, barber's rash, acne and so on. Internal causes are many and varied. Some have a congenital susceptibility to affections of the skin. Some others get them as a result of poisons inside the body.

The following are some of the preventive measures; (1) Cleanliness; (2) Education; (3) Other prophylactic measures.—*Medical World.*

Hobbies

THE development of a 'hobby' is essential to any normal individual, whether he be a scientist or a hod-carrier. The diversion of the human mind into new channels permits much needed rest, following which that mind will function with renewed vigour. Furthermore, the expansion of one's interests to include those which may be shared by persons of other walks of life tends to broaden one's view point, and new associations are made which may be of incalculable advantage.

Besides this, every individual must also look forward to the later years of life, when, perhaps, physical infirmity may prevent the continuance of his profession, and leave him stranded on a sand bar while the river of active usefulness rushes past. It is at such a period of life that a hobby may save his mind from utter stagnation, and, put to proper use, prove remunerative as well as beneficial.

He who develops hobbies and uses them for the purpose for which they are intended, namely of resting a tired brain and developing a new and useful field of activity—is storing up gold against days of poverty.—*Medical World.*

Physical Education

PHYSICAL education should be a prominent, if not the first, item in any school curriculum. It produces well-formed resilient bodies and responsive minds, and prevents defects of frame which depreciate vigour and pride of fitness. Is it not obvious that sound nutrition and trained development of body are the foundation stones on which effective education of the mind should be built? Leading educationists like Dr. Cyril Norwood and Sir Michæl Sadler support this view. And why is it necessary to educate the mind and not educate the body? Watch a parade of Territorials or a group of hikers and you will see defects of frame, handicapping to the owners, which could have been avoided by a proper physical education.

Further, to youth, unemployment does serious damage to quality, especially of mind and character. If, with the specialization of industry, some measure of unemployment is likely to be a lasting feature of the modern state, could not the unemployment allowances granted to the young be compulsorily linked up with such institutional provision as would furnish occupation and training of body and mind when wages for work are not available? Environment should be favourable enough to enable the individual to struggle with reasonable chance of success, but not so favourable as to minimize the need for struggle. The former favours the survival of the fit, the latter of the unfit.—*B. M. J.*

Folk Dances and Games

WE actually have in India a rich storehouse of our own national traditions which provide a perfectly inoffensive and joyous system of simultaneous physical, moral and spiritual culture and which conduce to harmonious physical development, foster unity between all classes. These are the folk dances and folk games which have been preserved among the village people of both sexes in every province in India. It is our unfortunate inferiority complex generated by miseducation which makes us blind to the value of our own folk dances and folk sports which provide invaluable materials not only for national body-building for one and all but also for national unification and for integrating the educated classes with the masses in a cultural fellowship. They will help to bring about a physical and spiritual rejuvenation of our people.

In recent years considerable progress has been made in Bengal in reviving the old folk dances and games and introducing them into the schools and colleges and into the social life of the educated classes, and the other parts of India will also strive to bring such a revival and thereby help to build up a more healthy nation.—(*By courtesy: All India Radio, Madras.*)

What is Health?

IT is the one factor that largely determines the four that constitute *the Ideal Life, viz* ,—Health itself, Longevity, Happiness and Efficiency. Such Health must be *physical* as well as *mental*. It consists, on the physical and individual aspect, not only in (1) freedom from any disease or defect, but in (2) strength, (3) stamina, (4) powers of resistance, (5) complexion and figure and (6) a 'vital surplus.' Similarly, on the mental side, all these factors could be easily applied to Mind to get a picture of Mental Health, *viz.*, (1) freedom from such mental diseases as meanness, jealousy, greed, anger, lust, etc., (2) strength of mind, (3) perseverance, (4) self-control, (5) pleasant manners and decent behaviour and (6) energy.

Such Health is to be earned and enjoyed by correct biological ways of living.

The Ways of Living:—The ways of living again must be physical and mental and be followed equally by men and women. They consist on the physical side, in (1) fresh air and open-air-mindedness, (2) sunlight, (3) proper balanced palatable food, of freshness and greenness, of some 'roughage' and 'toughage', (4) physical exercise with rest and relaxation and (5) cleanliness of habits and surroundings *i.e.*, avoidance of infection, (6) avoidance of luxury and 'drug-mania'; and, on the mental side, in practising (1) cheerfulness of mind, (2) interest in work, zest and joy of living, (3) understanding and toleration, (4) self-control: balance and harmony in life, (5) spiritual inspiration or regulating or tuning the note of life to a divine, humanistic or patriotic ideal and (6) a clearr ational understanding, avoiding 'blind' and unreasoning reliance on scriptures, socio-religious beliefs, which vary so much with time and place, climate and circumstances.

All such efforts are to be actived by a sincere desire, and checked up by regular perodic tests.

Roots of Health:—The above are as it were, the "leaves and branches" of the "Tree of Health", which for its stability, growth and vigour, must depend no less on its "roots".

These *Roots of Health* lie in (1) social or religious customs and some social habits, such as drink, gambling, overeating etc., (2) heredity, (3) environments of home and surroundings (sanitation), (4) education, (5) income or economic condition, (6) public opinion and co-operation, and State legislation and help. Reform and improvement of all these factors are essentially necessary for the attainment of ideal health; for, these are *the fundamentals*.

Health is said to be 'the essential condition for the advancement of any community' (Sir George Newman). Health is wealth that can be easily earned if one has the will and the patriotic urge. To accquire such Health for himself and for the Nation, one must keep this whole ideal before one's mind; for, Truth lies in the whole. So long as all the important and inter-related factors that contributed to the attainment of individual and national health are not comprehended at their full value and practised in life, the foundations of the 'beautiful national mansion' shall be weak, the house will sink and crack; for, it would not have been "founded on rock" of good health!—*Dr. D. N. Maitra in Indian Dental Journal.*

Bony Ecstasy

How many bones in the human face?
 Fourteen when they're all in place.
How many bones in the human head?
 Eight my child, as I've often said.
How many bones in the human ear?
 Four in each, and they help to hear.
How many bones in the human spine?
 Twenty-six, like a climbing vine.
How many bones in the human chest?
 Twenty-four ribs and two of the rest.
How many bones the shoulders bind?
 Two in each—one before, one behind.
How many bones in the human arm?
 In each arm two; two in each fore-arm.
How many bones in the human wrist?
 Eight in each, if none are missed.
How many bones in the palm of the hand?
 Five in each, with many a band.
How many bones in the fingers ten?
 Twenty-eight, and by joints they bend.
How many bones in the human hip?
 One in each, like a dish they dip.
How many bones in the human thigh?
 One in each, and deep they lie.
How many bones in the human knees?
 One in each, the kneepan, please.
How many bones in the leg from the knee?
 Two in each, we can plainly see.
How many bones in the ankle strong?
 Seven in each, but none are long.
How many bones in the ball of the foot?
 Five in each as the palms are put.
How many bones in toes, half a score?
 Twenty-eight, and there are no more.

—*The Indian Naturopath.*

Mouth Hygiene

MOUTH Hygiene is very important in the healthy but infinitely more so in the sick. The tongue should be kept clean, the teeth and gums should be carefully attended to. Pyorrhœa or pus at the gum margins is now-a-days blamed for so many conditions such as rheumatism, gastric and duodenal ulcers, a type of heart disease and general ill-health due to the absorption of germs and germ poisons into the blood stream. In cleaning the teeth certain points should be observed:—Bristles of the tooth-brush should not be too hard; if they are, not only will the gums be torn but germs may actually be forced between the gum margins and the teeth and there hide and multiply: the tooth-paste or powder should not be gritty, for hard rubbing with such a material will break the protective enamel of the teeth and decay will result. Cleaning should be performed in five stages. Firstly, the mouth should be thoroughly rinsed with tepid water containing a small pinch of soda or common salt. This removes large food-particles from the crevices of teeth and mouth. Secondly, tooth-brush which has been moistened in tepid water and is covered with a thin layer of tooth-paste is gently inserted between the teeth, working from the gum to the cutting margins. This must be done firstly from the front and then from behind the teeth. Thirdly, the teeth are brushed from side to side. Fourthly, they are brushed along the tops or crowns and lastly, the mouth is again well cleaned or well rinsed. This process should be gone through after every meal and last thing at night before retiring.

Management of Asthma

Breathing Exercise:—These constitute a most important means of treatment and are useful in all cases of asthma. In the first place by training the patient to breathe well he is given the feeling that he has some control over what was before a purely unconscious process, thereby engendering self-confidence. Secondly, most asthmatics breathe badly, even between attacks, failing to make adequate use of the diaphrgam, and being incapable of proper muscular relaxation. By fully expanding the lungs in a vertical as well as a horizontal direction, that is, by using diaphragmatic as well as thoracic movements, the bronchi and bronchioles are mechanically stretched in all directions, so that their diameter is increased to the greatest possible extent in the circumstance. Moreover by making the best use of his lungs, the effects of mild attacks of asthma will clearly be less noticeable to the patient. It is also possible, though difficult to prove, that normal respiratory movements set up reflex effects which diminish the tone of the bronchial musculature, thus leading to an improved air-way. Finally, but adequately ventilating all areas of lung, stagnation of mucus is prevented, and hence there is a diminshed likelihood of the development of infection.

Diet:—This should be light, and many patients do well on a mainly lacto-vegetarian regime. Large meals and indigestible foods, such as hard-boiled eggs, are at all times to be avoided, and especially in the evening. If specific sensitization to food materials is suspected, exclusion diets of the type recommended by Rowe may be used. These consist of three basic diets, in which common groups of food-materials are omitted. By finding a suitable basic diet on which the patient remains free from asthma and gradually adding other foods, those to which the patient is sensitive may be avoided.

General Health:—All asthmatics are worse when their general state of health is poor. Overwork, fatigue and anxiety all tend to bring about an increase in the incidence of asthmatic attacks, and are to be avoided as far as possible. The beneficial effects of a holiday or a stay in hospital, which may persist for a long time after return to working conditions, may partly be explained as due to an improved general state of health, as well as by inducing a more hopeful attitude and perhaps by breaking down "conditioned" asthma habits. Exercise in moderation is to be encouraged, and particularly in young subjects whose attacks of asthma are only intermittent.

In conclusion it may be said that thorough investigation and considerable patience are necessary for obtaining the best results in cases of asthma. In many chronic cases a combination of factors, sensitization, psychological and infective, all play a part in the production of attacks. In such, all these factors must be considered if the greatest improvement is to be achieved. In the majority, however, and particularly those whose attacks occur at long intervals, or in whom the asthma has been present for a short time only great benefit may be derived from relatively simple treatment, if correctly directed.—R. S. BRUCE PEARSON, D.M., M.R.C.P.—*The Clinical Journal.*

Burial and Cremation

OF these two ways of the disposal of the dead, the first seems to be the oldest and the second, the best. One of the causes for the survival of the first method is that the sudden and total destruction of the body, which in life sheltered a delicately woven structure of thoughts and memories, is considered to be too abrupt and indecent.

When a human body dies, a duty at once devolves upon the survivors to dispose of it. This duty is enjoined on them both by religion and Public Health. Generally, no restriction is laid on the method of disposal. Cremation is the customary method among the Hindus in this country, whereas burial is common among the Muhammadans and Christians. Burial or cremation in private ground is permissible, so long as no nuisance is caused and provisions of the local and the Public Health Acts and other statutory provisions are observed.

It is an offence to cremate or bury a body so as to prevent the holding of an inquest. It is not lawful according to the English law to cremate the remains of a person who is known to have left written directions to the contrary nor to cremate an unidentified body.

These provisions appear to be directed more to the welfare of the living than to the dignity of the dead.—*Adapted from Guy's Hospital Gazette.*

Suicide a Disease

AFTER prolonged study, a Harvard (U.S.A.) psychiatrist has come to the conclusion that—

1. Suicide is a disease.
2. It is the result of a personality disorder that is often marked by hysteria.
3. Medical treatment is not helpful.
4. It may be precipitated by physical strain, fatigue, mental conflict, or difficulties in the environment and social relations.
5. It cannot be cured, but it can be prevented.

Some of the preventives are available to every-one. They are:

1. Reading inspirational articles.
2. Conversing for an hour with an understanding friend, physician or priest.
3. Eating a good meal. It is said that this is the very best preventive of all. 'Very few persons attempt suicide on a full stomach.'—(*Treasure Chest*).

Description of an Old Type of Privy

THE outline of a type of privy which is used in some parts of the west coast of the Madras Presidency is described below:

It is primarily based on the same principles as those of the bore-hole latrine. It is remarkably free from smell, and flies do not breed in it so that it can be installed right in the house, thus enhancing its convenience. Also, with reasonable attention, it can be kept clean. Disinfectants and the services of sweepers are not needed and it does not require interference for a long time.

A squatting platform with the receiving hole, an impervious conducting channel in continuation of the latter, opening into a soakage pit, a few feet away from the squatting platform, form the skeleton of the privy. Where the first part is not inside the house, it is protected against sun and rain by a shed which also ensures privacy.

The squatting plate rests on a platform of masonry work about one and a half feet high and its top surface is flush with the floor of the room. It is made from a granite slab about two feet square and six inches thick. Leaving about an inch of margin on all the sides, the surface is hollowed, sloping towards the central hole which is surmounted on either side by the foot rest. The hole is drilled nearer to the posterior edge and is 9 inches by 6 inches. The raised edge with the general incline towards the centre, enables the complete draining of the ablution water into the hole and prevents its splashing on to the floor. Cement work has of late replaced the granite slab, where the latter is difficult to acquire.

The impervious channel is also formed of two pieces of granite, each 6 ft. by 6 inches by 4 inches. A half-channel is cut in the centre along the whole length of one of these and the other one is placed lengthwise on the top, thus forming a well protected drain. The opposing surfaces are carefully fitted and cemented at the edges. The half channel opens out at the squatting end into a wider trough roughly equal to the sectional area of the hole. The channel arrangement is fitted on to the under surface of the squatting platform so that the bottom of the funnel is formed by the widened out channel portion of the lower block and the covering piece or the upper block of granite is necessarily shorter than the lower one, by the length of the hole. The drain so formed slopes towards the pit with a good gradient and is below the surface of the earth.

The pit is dug in the earth and at a distance of about 6 to 8 ft. from the squatting platform and its walls are constructed of laterite and mortar. The floor of this pit is not closed but is formed of the natural loose earth. It is about 6 ft. square at the bottom and is narrowed down through a height of 8 ft. into 1½ ft. square at the top where it is closed by two equal pieces of laterite cemented together. The surface of this covering piece is 2 or 3 inches below the ground level. The pit should be constructed at the minimum distance of 50 ft. from the well.

A latrine of the above description used by a family of 8 to 10 members does not ordinarily call for interference for about 15 to 20 years or even longer. The pit is opened when necessary by removing the cover and the almost dry powdery excreta is removed and suitably trenched, the pit cleaned and closed again. The cost of such a latrine will not be more than 50 rupees.—*I. M. Gazette*.

Baby Crying or the Crying of Babies What does it mean?

CAUSES are very many. One or two good cries in a day are wholesome as they use up the still air in the lungs and fill them up with fresh air but frequent crying may depend solely on outside causes easily remedied and this should always be investigated and prevented from recurring. Some of these are:—(1) Cramp from being too long in one position, (2) A wet or soiled napkin, (3) A tight band tape or pin with unprotected points, (4) Hot or cold or lack of fresh air, (5) Bad habit—wishing for attention, (6) Thirst.

Remedies:—(1) Turn over or turn the pillow, (2) Change napkin, (3) Slip a warm hand under all the clothing and examine safety pin, (4) Feel the feet; if warm, see if the skin be moist from prespiration and if so remove the blanket or head flannel; if chilly, take up and warm by the fire. Wrap in a warm shawl and put hot water bottle under the bed, (5) Give the baby a few teaspoonfuls of cooled boiled water. An ounce or even more may be given. If all these causes of crying are eliminated there remains those concerning with food-supply. Then only give food. The habit of giving milk whenever the child cries is bad and is the cause of indigestion. The normal hunger cry occurs on awaking from a long sleep. It is loud and continuous, and the child will take the breast eagerly. If however, the hour for feeding is not come, he must wait. The other forms of crying are those of (1) the over-fed infant, (2) or the under-fed infant.

Home Remedies

Abscess

THIS term is applied to a painful and inflamed swelling which, after a certain course, ends in a discharge of an yellowish creamy fluid called pus. Abscess may attack any portion of the body. The symptoms are a swelling becoming in the course of two or three days very hot, painful and tender, the skin assuming a red colour. As the swelling increases, pain becomes more severe which is worse if the part affected is allowed to hang down.

Treatment :—Put the part at rest in an easy elevated position and apply poultice and hot fomentation. It is always safest to send for a surgeon, as the abscess if left to itself may bring on complications. If opened in good time the dangers are greatly diminished and the place heals quickly.

* * *

Acidity

ACIDITY of the stomach is a frequent symptom of indigestion. It usually arises from articles of food taken, especially those containing sugar.

Symptoms :—Heart burn or wind in the stomach or sour eructations. There may also be fullness, oppression, uneasiness, or even aching pain felt in the chest.

Treatment :—Treatment consists in avoiding those articles of diet which produce acidity such as, unripe fruit, sugar, butter and food containing much starch, such as, rice, potato, etc. Take 10 to 15 grains of Bicarbonate of Soda dissolved in an ounce of water. Aerated water often gives relief. If the bowels are constipated, take some opening salt such as Sulphate of Magnesium—four teaspoonfuls—or Eno's Fruit Salt, etc.

* * *

Acne

SWELLING and inflammation about the oily glands of the skin, leading to the formation of pimples. It is a very common disease, especially when boys and girls come of age. Acne pimples do not usually itch ; sometimes retained secretion causes inflammation and matter forms.

Treatment :—If it is painful, give a little hot fomentation. If there is constipation, attend to it. If there is debility, take tonics such as iron, quinine and Cod Liver Oil. Apply externally white precipitate ointment.

* * *

Ague

A KIND of malarial fever, very common all over India, caused by a microscopic parasite. The disease begins with feelings of sickness, oppression, fatigue, flying pains in the limbs and head and chilliness. This increases till there are violent shivering fits with chattering of teeth, cold shrunken limbs. This is the first or cold stage. After a while, the hot stage comes on with hot dry skin, headache and fever. Finally, this gives way to the third or sweating stage, in which there is copious perspiration with disappearance of all symptoms, leaving the patient feeble but otherwise well. These three stages form an ague fit. After an interval, there comes another attack like the first, which may be followed by a third or even more. The fit returns with great regularity either everyday, every other day, every third day or at other intervals. Sometimes the attacks are irregular.

Treatment :—If the bowels are loaded, give a purgative such as, Epsom salt—four teaspoonfuls in a half tumblerful of water. During the cold stage, put the patient to bed with plenty of blankets, in hot stage give plenty of cool drinks. At the close of sweating stage, dry carefully and change linen. Then give quinine 10 grains every 6 hours during the interval.

Prevention :—Avoid malarial districts. If that is not possible, sleep under mosquito curtain. If that is not possible when you are compelled to enter such districts, take quinine 2 to 5 grains twice or thrice daily.

* * *

Anæmia

ANÆMIA really signifies lack of blood. Healthy blood contains an immense number of red globules which give the blood its red colour. In anæmia these red globules are less in number. The chief causes are want of fresh air and light, irregular hours, insufficient ill chosen food, anxiety and overwork.

Symptoms :—Symptoms are pallor, especially noticeable in the lips and tongue, headache, giddiness, constipation, loss of appetite, indigestion, palpitation, shortness of breath or swelling of the feet.

Treatment :—Keep regular hours and take plenty of exercise in the open air or change of air or sea voyage. Take nourishing and easily digestible food, medicinally iron in some form to be taken. If there is constipation get it relieved. Take plenty of fruits.

* * *

Appetite

APPETITE may be lost through many causes such as too frequent or irregular meals, abuse of stimulants, excessive smoking, sedentary occupation, mental anxiety or pre-occupation. It is also lost in poverty of blood, fevers and other diseases which weaken the digestive power of the stomach. An excessive appetite may rise from the presence of worms or very imperfect digestion. It is common during convalescence from fevers. If excessive of appetite is due to worms, this must be got rid of. A voracious appetite is sometimes caused by diabetes. A perverted appetite is occasionally met with in pregnant or hysterical women. In such cases, there may be a craving for chalk, charcoal, ashes and other indigestible substances.